

**WHAT IS CLAIMED IS:**

1. A system for automatic signal recording and analysis of the subsidence behavior of a test object after a mechanical pulse excitation, comprising:

a coupler to sensors that are provided for detecting vibration of the test object and converting the detected vibration into analog vibration signals;

an amplifier configured to adjust the amplitude of the analog vibration signals;

a low-pass filter configured to at least reduce aliasing effects in the analog vibration signals;

an analog-to-digital converter configured to convert the analog vibration signals into digital signals; and

a computer configured to analyze the vibration and to evaluate the digital signals;

wherein the coupler, the amplifier, the low-pass filter, the analog-to-digital converter and the computer are combined in a compact mobile unit in a series connection, and the sensors are integrated into the compact mobile unit.

2. The system according to Claim 1, further comprising at least one of a digital input and a digital output as a connection from the computer to a mechanism for mechanical pulse excitation of the test object.

3. The system according to Claim 2, wherein the computer is configured to control the mechanical pulse excitation of the test object via the mechanism.

4. The system according to Claim 1, further comprising at least one power supply configured to supply power to the sensors.

5. The system according to Claim 1, further comprising a communications interface connecting the computer to an external operator control and monitoring system.

6. The system according to Claim 1, further comprising at least one of a digital input and a digital output as a connection from the computer to an external automation device.

7. The system according to Claim 1, wherein at least one operator control and monitoring element is integrated into the compact mobile unit.

8. The system according to Claim 1, wherein the computer is an adaptive system.

9. An integrated mobile unit, comprising:  
at least one sensor configured to detect mechanical vibrations of a test object into electrical signals;  
a signal processor configured to produce digital evaluation signals in accordance with the electrical signals;  
a computational component configured to analyze the evaluation signals with respect to a vibrational subsidence of the mechanical vibrations of the test object;

wherein the sensor, the signal processor and the computational component are integrated into the mobile unit and together form a series connection.